REGULATORY IMPACT ANALYSIS OF EPA'S FINAL REVISIONS TO THE NATIONAL AMBIENT AIR QUALITY STANDARDS FOR PARTICLE POLLUTION (PARTICULATE MATTER)

FACT SHEET

SUMMARY

- On October 6, 2006 the U.S. Environmental Protection Agency completed its Regulatory Impact Analysis (RIA) of the 2006 National Ambient Air Quality Standards for fine particle pollution, also called fine particulate matter or $PM_{2.5}$. The RIA examines the benefits and costs of reducing pollution to meet the Agency's recently revised fine particle standards.

- The RIA is intended to inform the public about the potential benefits and costs of implementing the $PM_{2.5}$ standards, which EPA issued September 21. It also illustrates emission control strategies states might adopt to meet the revised standards in an efficient and cost-effective manner.

- The analysis shows the benefits of meeting the revised $PM_{2.5}$ standards clearly outweigh the costs.
- Because of data and modeling limitations, EPA did not analyze the benefits and costs of retaining the existing PM10 standard.
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- EPA did not use this analysis in setting the particle pollution standards. As interpreted by the Agency and the courts, the Clean Air Act prohibits EPA from considering costs in setting or revising any national air quality standard.

- EPA analyzes the benefits and costs of any major rule under requirements of Executive Order 12866 and according to guidelines from the White House Office of Management and Budget.

- To estimate the benefits of meeting a standard, EPA uses peer-reviewed studies of air quality and health and welfare effects, sophisticated air quality models and peer-reviewed studies of the dollar values of public health improvements. EPA also sought the opinions of outside experts to help the Agency better describe uncertainties in estimating the reduction in premature death associated with reducing fine particle pollution.

BENEFITS AND COSTS OF MEETING THE FINE PARTICLE STANDARDS

- EPA issued two standards for $PM_{2.5}$: an annual standard, which the Agency retained at 15 micrograms per cubic meter ($\mu g/m^3$); and a 24-hour standard, which the Agency tightened from 65 $\mu g/m^3$ to 35 $\mu g/m^3$.

- EPA calculated a range of benefits for fully meeting the revised 24-hour $PM_{2.5}$ standard using estimates based on the opinion of outside experts, along with published scientific studies. That calculation shows that the revised standards will yield $9 billion to $76 billion a year in

health and visibility benefits in 2020. Health benefits include reductions in premature death, diseases and symptoms associated with fine particle pollution exposure.

- The $9 billion to $76 billion range of benefits reflects two different sources of information about the impact of reductions in PM on the risk of premature death. These sources include both published epidemiology literature and an expert elicitation study that EPA conducted in 2006.

- The Regulatory Impact Analysis includes a variety of benefits estimates based on both sources of information. For example, estimates based on an American Cancer Society study show benefits of meeting the revised 24-hour PM 2.5 standards at $17 billion a year in 2020.

- EPA intends to ask the Science Advisory Board for advice on how to best incorporate recent scientific studies in its benefits analyses.

- The benefits of meeting the revised 24-hour $PM_{2.5}$ standards include the value of an estimated reduction in:
    - 1,200 to 13,000 premature deaths in people with heart or lung disease (Note: This range includes estimates based on the opinion of outside experts, along with published scientific studies;
    - 2,600 cases of chronic bronchitis,
    - 5,000 nonfatal heart attacks,
    - 1,630 hospital admissions for cardiovascular or respiratory symptoms,
    - 1,200 emergency room visits for asthma,
    - 7,300 cases of acute bronchitis,
    - 97,000 cases of upper and lower respiratory symptoms,
    - 51,000 cases of aggravated asthma,
    - 350,000 days when people miss work or school, and
    - 2 million days when people must restrict their activities because of particle pollution-related symptoms.

- EPA estimates the cost of meeting the revised 24-hour $PM_{2.5}$ standards at $5.4 billion in 2020. This estimate includes the costs of purchasing and installing controls for reducing pollution to meet the standard.

- The benefits and costs of meeting the revised 24-hour standards are in addition to the benefits and costs of meeting the 1997 annual fine particles standards, which EPA has retained.

- Based on recently updated estimates, meeting the 1997 standards will result in benefits ranging from $20 billion to $160 billion a year in 2015. These updated estimates include the opinion of outside experts on the risk of premature death, along with other benefits information. EPA estimates the cost of meeting the 1997 standards at $7 billion.

- As required by Office of Management and Budget guidelines, EPA also outlined the benefits and costs of alternative levels that were more and less stringent than the standards EPA issued in September 2006. Information on these alternatives is included in the Regulatory

Impact Analysis.

LIMITATIONS AND UNCERTAINTIES

- Benefit-cost analyses are subject to uncertainties and limitations due to gaps in our understanding and our ability to predict the future. For this analysis, limitations include those associated with: air quality modeling; uncertainties in current emissions and future year estimates; the future availability of emerging control technology; and our understanding of the magnitude of public health improvements associated with reducing particle pollution levels throughout the United States.

- EPA is working to better characterize the uncertainty in its benefits and costs estimates, as recommended by the National Academy of Sciences. As part of this effort for this Regulatory Impact Analysis, EPA conducted an expert elicitation -- a formal, structured and well-documented study used to obtain expert judgment on a specific subject or question.

- For this elicitation, EPA conducted in-depth interviews with 12 national experts to obtain their judgments on the numbers of premature deaths reduced by lowering fine particle concentrations. EPA focused on premature death, because it accounts for a large portion of the benefits of meeting the standards.

- The experts interviewed had a range of views about the relationship between exposure to fine particles and premature death.

- The elicitation was designed to characterize one aspect of the potential uncertainties in the benefits estimates. . EPA did not use the elicitation in setting the standards.

FOR MORE INFORMATION

- The Regulatory Impact Analysis and supporting documents are available on the Web at http://www.epa.gov/particles/actions.html.